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Doctoral Education in Texas, Part 2: Recommendations to the State

Texas Higher Education Coordinating Board  
October 2004

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Page 2

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## **APPENDICES**

### Appendix A - K

Doctoral Education in Texas, Part 2: Recommendations to the State

Texas Higher Education Coordinating Board  
October 2004

## Appendix A

### National Awards for Promoting Inclusive Graduate Communities

The Council of Graduate Schools/Peterson's Award for Promoting an Inclusive Graduate Community is given annually to institutions that develop and implement innovative, creative approaches to enhancing the graduate experience by identifying, recruiting, retaining, and graduating minority graduate students. The following is a list of recent award recipients and some of the various initiatives currently in practice at these institutions. Administrators and faculty at Texas institutions are encouraged to learn more about these and other similar programs.

The University of Mississippi (2003 award winner) has a comprehensive program to recruit and retain underrepresented students that includes a writing assistance program for international students, annual social and cultural activities, a mentorship program that puts "graduate ambassadors" together with new graduate students to help facilitate the transition into graduate school, and a series of luncheon discussion meetings that bring students and faculty together regularly. In addition, the institution works with other national and state-wide initiatives including the Ronald E. McNair Post-Baccalaureate Achievement Program, The Alliance for Graduate Education in Mississippi, the Biomedical Research Internship program, and the Short-Term Training for Minority Students program. Some of these programs offer financial support while others, targeting specific groups such as science students, provide research and internship opportunities. The institution reports that minority graduate enrollment was approximately 2 percent of the total graduate enrollment in 1990 and has risen to about 15 percent. Completion rates for minority graduate students are as high as they are for non-minority students. Additionally, the percentage of African-American students completing Ph.D.'s is equivalent to the percentage of African-American students enrolled in the graduate school; so attrition rates appear to be low (or stable).

The University of Maryland, Baltimore County (2002 award winner) focuses its efforts on developing better mentorship relationships between faculty and graduate students in an attempt to reduce the attrition rates of minority doctoral students. Its efforts are particularly targeting those fields in which women and minorities have been historically underrepresented, such as science, math, engineering, and technology. In addition, a sizeable grant from the National Science Foundation in the amount of \$2.5 million was obtained by the institution to create PROMISE, Maryland's Alliance for Graduate Education and the Professoriate, which established a consortium of various universities. This program focuses on recruitment, mentoring, and professional development. The program includes retreats, seminars, conferences, peer mentoring, and other community building and professional development initiatives. Students in the program can also teach courses in partnership with the McNair Scholars program and the Howard University Electrical and Computer Engineering Department. Furthermore, the Meyerhoff Graduate Fellows Program in the Biomedical Sciences supports minority students by providing financial stipends, a summer research program, monthly discussion groups and annual retreats with faculty and other students, and mentoring. Since 1996 the institution reports significant increases in applications, enrollments, and retention of minority students particularly in STEM fields. The overall retention rate is reported to be 74 percent.

The Graduate School at the University of Missouri-Columbia (2001 award winner) includes a variety of programs aimed at increasing diversity. The Louis Stokes Missouri Alliance for Minority Participation is designed to increase the number of doctoral graduates in science, mathematics, engineering, and technology through a broad range of initiatives including mentoring, collaborative learning sessions, GRE prep courses, scholarships, summer research seminars, and many other funded programs. The institution also participates in the Alliance for Graduate Education and the Professoriate program, the Ronald E. McNair Post-Baccalaureate Achievement Program, and the Preparing Future Faculty Program. In addition, the Multicultural Teaching Scholars Program exposes undergraduate and graduate students to a more diverse faculty by hiring recent minority doctoral graduates or those nearing completion to teach or co-teach a course during a summer session.

The University of Georgia won the award in 2000. Among the efforts being developed and implemented through the office of recruitment and retention in the graduate school are the following: a series of workshops designed to increase faculty involvement in creating a climate of inclusiveness, the development of a faculty-oriented handbook of “best practices” in recruiting a diverse graduate student body, recognition and reward for faculty involvement in creating an inclusive graduate program, the development of a program that allows undergraduates from underrepresented groups to engage in research opportunities with faculty, the development of recruitment fairs and campus visits, the collaboration with regional and state institutions to create feeder programs that channel selected students into doctoral programs, and the organization of monthly mixers for graduate students, faculty, and local professionals. The office of recruitment and retention does not currently track students through graduation.

SUNY at Stony Brook University (1999 award winner) has developed a diversity program that includes the integration of a variety of initiatives aimed at developing and maintaining a climate of inclusiveness on campus. With the creation of an upper-level administrative position, the associate dean for underrepresented student affairs, came the development of several related programs. The Post-Doctoral Diversity Program allows recent graduates to gain professional development experience within the academic environment while increasing diversity at the institution. The Presidential Lecture Series brings to campus nationally renowned speakers and scholars of color. The President’s Award for Excellence in Diversity and Affirmative Action recognizes individuals who have made outstanding contributions to the advancement of equal opportunity and affirmative action at the institution. Recognized accomplishments include improving the University’s working, learning, and teaching environments as they affect diverse populations. In addition, the institution participates in the Louis Stokes Alliance for Minority Participation program, has a summer research institute for undergraduates, invites potential graduate students to campus visits, and other programs designed to increase participation of underrepresented groups.



## Appendix B

### National Programs and Initiatives to Support Black and Hispanic Graduate Students

A number of national resources are available to attract, retain, and graduate underrepresented minorities in doctoral programs. Many Texas institutions have already well-established relationships with some of these organizations. The following are brief descriptions of some of these programs and initiatives:

The National Consortium for Graduate Degrees for Minorities in Engineering and Science, Inc., (GEM) whose goal is to increase the number of American Indian, African American, Latino, Puerto Rican, and other Hispanic Americans, offers fellowships to students pursuing graduate degrees in engineering, physical science and natural science disciplines. The fellows can also obtain practical work experience through summer internships at GEM Employer worksites. In addition to offering fellowships, GEM creates publications and videos for graduate, undergraduate, and pre-college students. GEM also provides courses to prepare undergraduates to succeed in graduate coursework and guidance to graduate-level students on how to be successful in doctoral research programs.

The Council of Graduate Schools, an organization of institutions of higher education whose mission is to improve and advance graduate education, is currently reviewing grants specifically targeted at creating intervention strategies for doctoral students in science, engineering, and mathematics (SEM) and evaluating the effects of these strategies on attrition and completion rates. The goal is to increase Ph.D. completion and to provide models for best practice that can be used nationwide, including strategies that help to improve completion rates among minorities and women.

The Preparing Future Faculty (PFF) program, initiated in 1993 as a partnership between the Council of Graduate Schools and the Association of American Colleges and Universities, is a program developed to change the way future faculty members are prepared for their careers. These programs provide doctoral students, as well as some master's and postdoctoral students, with opportunities to observe and experience faculty responsibilities at a variety of educational institutions with varying missions, diverse student populations, and different faculty expectations. Between 1993-2003, PFF programs were implemented at more than 45 doctoral degree-granting institutions and nearly 300 "partner" institutions in the United States. While the grant periods have ended, the Council of Graduate Schools continues to provide administrative support to existing programs and to those interested in developing new PFF programs. Many institutions involved in these programs have distinct missions and constituencies. In particular, there are 16 historically black colleges and universities (HBCUs), 23 Hispanic-serving institutions (HSIs), 10 women's colleges, and 4 tribal colleges. The following Texas institutions are currently involved in PFF programs: Huston-Tillotson College, Prairie View A&M University, Texas Southern University, Our Lady of the Lake University, St. Edward's University, Texas A&M International University, Texas A&M University-Kingsville, and The University of Texas-Pan American.

The Integrative Graduate Education and Research Traineeship (IGERT) program, initiated in 1997 by the National Science Foundation (NSF), has been developed to meet

the needs of Ph.D. scientists, engineers, and educators with research and education interests that are primarily interdisciplinary. The program is intended to establish new models for graduate education and training in research activities that transcend traditional disciplinary boundaries. It is also intended to facilitate greater diversity in student participation and preparation and to contribute to the development of a diverse, globally-engaged science and engineering workforce. Proposals submitted to the IGERT program must be integrative, research-based, graduate education and training activities in emerging areas of science and engineering. The project should be organized around an interdisciplinary theme. Students should gain a breadth of skills and understanding to work in an interdisciplinary environment while being well grounded with depth of knowledge in a major field. The project should provide students with experience relevant to both academic and nonacademic careers. This may involve such activities as internships and mentoring in industrial, national laboratory, academic, or other settings.

The Alliances for Graduate Education and the Professoriate (AGEP) program seeks to increase the number of African-American, Hispanic and American Indian/Alaskan Native (Native American) students receiving doctoral degrees in all disciplines funded by the National Science Foundation (NSF). The association believes that the scarcity of role models and mentors in the professoriate constitutes a significant barrier to producing minority graduates; NSF is, therefore, interested in increasing the number of minorities in the professoriate. Specific objectives of the AGEP Program are to develop models for recruiting, mentoring, and retaining minority students in doctoral programs and to develop effective strategies for identifying and supporting underrepresented minorities who want to pursue academic careers. The AGEP program also supports research aimed at identifying major factors that promote successful transition of minority students from undergraduate through graduate study, from graduate course-taking to independent research required for the dissertation, and from the academic environment to the workplace.

The National Science and Technology Council focuses on women and minorities' participation in STEM fields in an effort to increase the representation of these groups in the U.S. workforce. The Center for the Integration of Research, Teaching and Learning (CIRTL) Diversity Institute brings together educators and scholars to produce materials and resources that are intended to improve STEM higher education based on the idea that student learning is enhanced when classes, laboratories, and discussion sections cultivate participation and engagement of all students irrespective of race, gender, or socioeconomic background. In particular, the goal of the Diversity Institute is to create and disseminate resources that will enable faculty and future faculty to enhance diversity in STEM fields by creating inclusive classrooms. Faculty and students bring a variety of experiences, backgrounds, and skills to the teaching and learning process. The main principles adopted by the organization include promoting interaction among scholars that connects research to current issues and integrates contributions made by women and underrepresented minorities to science into course content, develops an inclusive climate in which educators draw on the experiences of students from a variety of backgrounds, and creates equitable teaching environments through deliberate efforts on the part of educators who are encouraged to monitor examples, language, and student interactions to ensure an atmosphere of inclusion.

The Ronald E. McNair Postbaccalaureate Achievement program awards grants to institutions for projects designed to prepare participants from disadvantaged backgrounds and with strong academic potential for doctoral study through involvement in research and other scholarly activities. The primary goal of the program is to increase the attainment of the Ph.D. by students from underrepresented segments of society. Institutions work closely with participants through their undergraduate work, encourage their entrance into graduate programs, and track their progress to successful completion of advanced degrees. Some of the services provided by the program include making research opportunities available to students at the undergraduate level, mentoring, seminars and other scholarly activities, summer internships, tutoring, academic counseling, assistance in obtaining financial aid, and assistance in securing admission into graduate programs.

The Louis Stokes Alliance for Minority Participation (LSAMP) program is designed to develop strategies necessary to strengthen the preparation of and increase the number of minority students who complete baccalaureates in STEM fields. This objective is intended to lay the groundwork for the long-term goal of increasing the production of Ph.D.s in STEM fields, with a particular emphasis on promoting entry into faculty positions. The LSAMP program requires each awardee to establish partnerships among academic institutions as well as government agencies and laboratories, industry, and professional organizations. The kinds of activities these partnerships are encouraged to develop include student enrichment programs such as collaborative learning and mentoring, academic enrichment programs such as curricular and instructional improvement, and direct student support such as summer activities.

Since 1995, The Alfred P. Sloan Foundation's Minority Ph.D. Program, administered by The National Action Council for Minorities in Engineering (NACME), offers scholarship support to underrepresented minority students who are beginning their doctoral work in engineering, natural science, and mathematics. The faculty members and departments participating in the Alfred P. Sloan Minority Ph.D. Program were selected because they have demonstrated a commitment to educating African American, American Indian and Latino leaders. Each has a track record of preparing women and men from historically underrepresented groups for leadership in engineering, technology, and math- and science-based disciplines. Sloan and the departments work together to guarantee students financial support, mentoring, and guidance as long as they are making satisfactory progress toward the degree. Texas institutions engaged in this program include Rice University, Texas A&M University, The University of Texas at Austin, and The University of Texas at San Antonio. The program also produces a written guide to faculty and administrators for the successful recruitment of minority students into science and engineering Ph.D. programs.

The United Negro College Fund (UNCF)'s primary goal is to enhance the quality of higher education by providing financial assistance to deserving students. It provides more than 450 grants, scholarships, and fellowships to assist both undergraduate and graduate students every year. One such program, the Gates Millennium Scholars program, can support a student from undergraduate school through his or her doctoral education. In addition, the UNCF website lists thousands of scholarships and grants

administered by other organizations. The database can be searched alphabetically, geographically, and by discipline or major.

### **Research**

With the support of The Atlantic Philanthropies and The Andrew W. Mellon Foundation, the Woodrow Wilson National Fellowship Foundation's Responsive Ph.D. is currently investigating major support programs for minorities pursuing graduate education. The mission is to examine existing, national support programs, both public and private, to learn more about the outcomes of different support structures, including institution-based vs. individual-based programs, need-based aid vs. programs specifically targeted to minority students, intervention vs. pure funding models, and liberal arts vs. discipline-specific programs. The project will then produce a report that provides an outline of the existing programs describing their goals, achievements, and potential strengths and weaknesses. The findings will provide an agenda for a future conference on the effectiveness of current strategies and on the potential for common action.

## Appendix C

### Efforts by Texas Institutions to Increase Diversity in Doctoral Education

A review of the graduate school websites for Texas public universities yielded the following information regarding the state's current efforts to increase diversity in doctoral programs. This list may not represent all of the activities being carried out in Texas with respect to this issue. In addition, as stated before, many Texas institutions have already established relationships with some of the national organizations described above that promote diversity in graduate education.

#### *General findings:*

- Many institutions state a commitment to identify, recruit, and retain students with high potential for academic success who are from groups historically under-represented in higher education.
- Some institutions include a statement in their strategic plans about increasing the number of minority faculty.
- Many institutions provide resources to assist international graduate students in their acclimation to the U.S. academic environment.
- Many institutions list on their websites financial aid resources for minority students, including those for women, African Americans, and Hispanic Americans.
- Some institutions have campus organizations specifically to support minority students in graduate programs, for instance, the Black Graduate Student Association and the Graduate Women in Business group.
- Some institutions' student government associations have developed programs to recognize and promote the diversity of the graduate students at the institution.
- Some institutions have developed workshops and handbooks to train faculty and administrators on how to better receive students from underrepresented populations, how to create a more inclusive departmental or program environment, and how to create a more inclusive classroom learning environment.
- Some institutions have developed workshops and handbooks for undergraduate students on how to prepare for graduate school.
- Some institutions provide incentives to graduate programs that develop proposals for participation in national initiatives to increase graduate student diversity.
- Some institutions partner with other state institutions, especially the Hispanic-serving and historically black institutions, to funnel prospective students into appropriate graduate programs.

- Some institutions encourage and provide incentives for the emulation of diversity pipeline programs developed in other states and regions.
- Some institutions have plans to invite alumni who have earned doctorates at other institutions to return to teach, conduct research, and mentor minority graduate students.
- Some institutions involve students and faculty in workshops and conferences addressing the issue of diversity.
- Some institutions support networking through regular social and professional activities.
- Some institutions establish summer teaching and research programs to support and develop minority students.
- Some institutions are developing internship opportunities for undergraduates to engage in research activities.
- Some institutions perform assessment of their diversity initiatives by reviewing enrollment patterns and the number of special teaching, research, mentorship, and other programs that have been developed.

### **Targeted Fellowships**

In addition to the specific activities designed to promote diversity in graduate education, many Texas institutions list resources and targeted fellowships available to students from underrepresented groups. The following is a list of many of those resources:

- The Albert W. Dent Graduate Student Scholarship (healthcare management)
- American Association of University Women Educational Foundation
- American Dental Association Foundation
- American Educational Research Association (AERA): Minority Fellowship Program
- American Geological Institute Minority Participation Program
- American Indian Graduate Center (AIGC): Academic Year Fellowship
- American Indian Science and Engineering Society (AISES)
- American Institute of Certified Public Accountants
- American Physiological Society Minority Awards

- American Planning Association Fellowship Program
- American Political Science Association Minority Fellows Program
- American Psychological Association Minority Fellowship Program
- American Society for Microbiology
- American Sociological Association Minority Fellowship Program
- AT&T Labs Fellowship Program
- CIRI Foundation Scholarship Program: Special Excellence Scholarships
- Congressional Black Caucus Foundation, Inc
- Congressional Hispanic Caucus Institute Fellowship Program
- Cooper-Hewitt National Design Museum (Smithsonian Institution): Kell-Muñoz Education Fellowship
- Council of American Overseas Research Centers 2003 Multi-Country Research Fellowship Program for Advanced Multi-Country Research 2003-2004
- Department of Energy, Global Change Education Project, (GCEP): Graduate Research Environmental Fellowships
- Ford Foundation Fellowships for Minorities
- The Gates Millennium Scholars Program
- G.E. Foundation: Faculty for the Future Program
- GEM Consortium
- Government Finance Officers Association
- Graduate Education for Minorities MS Engineering Fellowship Program
- Graduate Education for Minorities Ph.D. Program in Engineering
- Graduate Education for Minorities Ph.D. Program in Science
- Hispanic Association of Colleges & Universities Scholarship Programs
- Hispanic Scholarship Fund - HSF/Pfizer Inc. Fellowship Program

- Hispanic Scholarship Fund - National Hispanic Foundation for the Arts 2004-2005 Entertainment Arts & Industry Scholarship Program
- Hispanic Scholarship Fund - National Society of Hispanic MBAs Scholarship 2003-2004 Program
- Howard Hughes Medical Institute (HHMI): Predoctoral Fellowships in the Biological Sciences
- Institute for the Study of World Politics: Dorothy Danforth Compton Fellowships for Dissertation Work
- Korean-American Scholarship Foundation (KASF): KASF Scholarships
- League of United Latin American Citizens
- Lucent Technologies: Bell Labs Graduate Research Fellowship Program
- Mathematical Policy Research, Inc.: Summer Fellowships
- Mexican American Legal Defense & Education Fund
- Minority Medical Education Program
- NASA/Harriet g. Jenkins Predoctoral Fellowship Fund
- National Consortium for Graduate Degrees for Minorities in Engineering and Science, Inc. (GEM): Graduate Fellowship Programs
- National Organization for the Professional Advancement of Black Chemists and Chemical Engineers (NOBCChE): African-American Graduate Fellowships
- National Physical Science Consortium (NPSC): Graduate Fellowships in the Physical Sciences
- Newberry Library (D'Arcy McNickle Center for the History of the American Indian): Frances C. Allen Fellowships
- NOAA/ U.S. Department of Commerce: The Dr. Nancy Foster Scholarship Program
- Oak Ridge Institute for Science and Education (ORISE)/ U.S. Nuclear Regulatory Commission Historically Black Colleges and Universities: Student Research Participation
- The Ph.D. Project



- Robert Bosch Foundation Fellowship Program
- Smithsonian Center for Latino Initiatives (SCLI) (Smithsonian Institution): Latino Studies Predoctoral Fellowships
- Smithsonian Institution, Office of Fellowships (Various awards)
- Society for Advancement of Chicanos and Native Americans in Science
- Society of Mexican American Engineers and Scientists 2003-2004 National Scholarship Program
- Solomon R. Guggenheim Museum: Summer Internship for Diversity in the Museum Profession
- SREB Minority Doctoral Scholars Program
- Sylvia Taylor Johnson Minority Fellowship in Educational Measurement
- Texas Opportunity Graduate Fellowship
- United Negro College Fund - Merck Graduate Science Research Dissertation Fellowships
- United Negro College Fund - Pfizer Biomedical Research Initiative
- U.S. Department of Health and Human Services (NIH), Agency for Healthcare Research and Quality (AHRQ): Predoctoral Fellowship Awards for Minority Students
- USA Funds: Access to Education Scholarships
- Women in Defense
- William Randolph Hearst Endowed Scholarship for Minority Students
- Xerox Corporation: Xerox Technical Minority Scholarships

## **Appendix D**

### **Texas' Two Historically Black Public Institutions**

In collaboration with the Office of Civil Rights within the U.S. Department of Education, Texas's two public historically black institutions have created priority plans to strengthen the overall education of students at these schools. These documents include specific plans to improve existing degree programs and to develop new ones; to build and/or upgrade facilities; to maintain or obtain accreditation for specific programs; to create and/or expand academic and administrative support systems; to hire a number of endowed chairs; to create merit-based scholarship programs; to strengthen faculty, staff, and student support services; to improve recruitment, retention, and graduation rates; and many others. Regarding graduate education in particular, Texas Southern University's current priority plan includes the creation of seven new master's programs and three new doctoral programs in high demand fields such as biomedical and pharmaceutical sciences, computer science, and management information systems. The doctoral program in pharmaceutical sciences was approved in July 2004. Prairie View's current plan includes the creation of six new master's programs and three new doctoral programs. The doctoral programs, which are in clinical adolescent psychology, educational leadership, and electrical engineering, have all been approved since the priority plan has been in effect.

In addition, Texas's historically black public institutions participate in programs specifically designed to enhance the doctoral education experience for black students and to increase their participation in graduate programs. Both Prairie View A&M University and Texas Southern University participate in the Preparing Future Faculty program, initiated in 1993 as a partnership between the Council of Graduate Schools and the Association of American Colleges and Universities. This program provides an in-depth, internship experience for doctoral students to observe faculty engaged in teaching, research, and service activities. Furthermore, Prairie View's University Scholars program prepares undergraduate students with high academic achievements to enter and complete graduate and professional programs at highly competitive institutions by working with faculty mentors on research and/or creative projects. Texas Southern University's School of Law and School of Pharmacy have obtained grants from the U.S. Department of Education for their significant contribution to graduate education opportunities for Black Americans.

## Appendix E

### 2000 CIP\* Code Taxonomy

<u>2-Digit Code</u>	<u>Title</u>
01	Agriculture, Agriculture Operations, And Related Sciences
03	Natural Resources And Conservation
04	Architecture And Related Services
05	Area, Ethnic, Cultural, And Gender Studies
09	Communication, Journalism And Related Programs
10	Communications Technologies/Technicians And Support Services
11	Computer And Information Sciences And Support Services
12	Personal And Culinary Services
13	Education
14	Engineering
15	Engineering Technologies/Technicians
16	Foreign Languages, Literatures, And Linguistics
19	Family And Consumer Sciences/Human Sciences
22	Legal Professions And Studies
23	English Language And Literature/Letters
24	Liberal Arts And Sciences, General Studies And Humanities
25	Library Science
26	Biological And Biomedical Sciences
27	Mathematics And Statistics
29	Military Technologies
30	Multi/Interdisciplinary Studies
31	Parks, Recreation, Leisure And Fitness Studies
38	Philosophy And Religious Studies
39	Theology And Religious Vocations
40	Physical Sciences
41	Science Technologies/Technicians
42	Psychology
43	Security And Protective Services
44	Public Administration And Social Service Professions
45	Social Sciences
46	Construction Trades
47	Mechanic And Repair Technologies/Technicians
48	Precision Production
49	Transportation And Materials Moving
50	Visual And Performing Arts
51	Health Professions And Related Clinical Sciences
52	Business, Management, Marketing, And Related Support Services
54	History

\* CIP = Classification of Instructional Programs. CIP Code System is administered by the National Center for Education Statistics of the U.S. Department of Education

## **Appendix F**

### **Data Analysis Methodology for Doctoral Degree Completion Rates and Time to Doctoral Degrees in Texas**

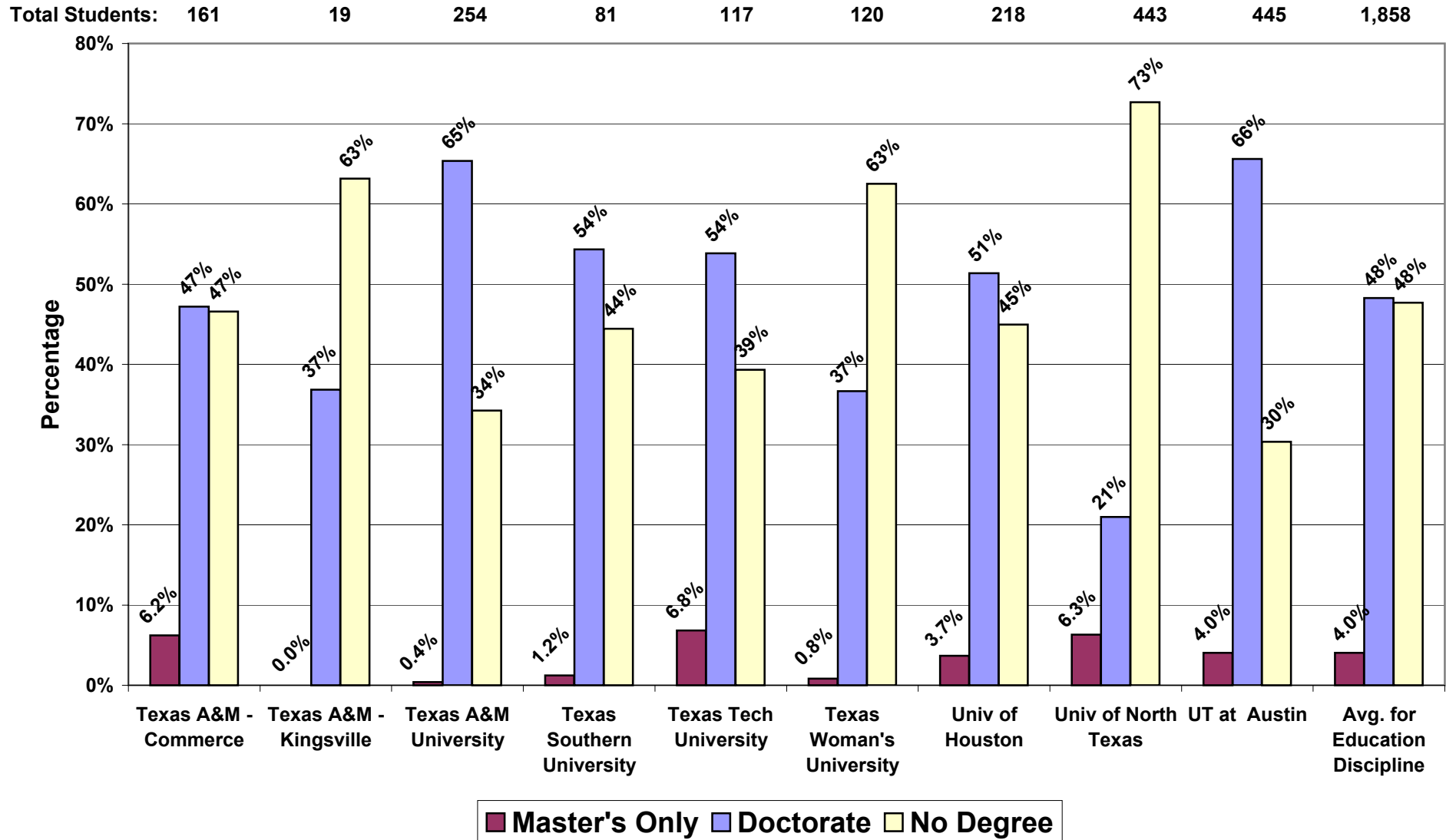
A cohort analysis was used to investigate doctoral attrition and time-to-degree rates. Based on information provided by the institutions on the Student Report (CBM 001) and Graduation Report (CBM 009) to the Coordinating Board, three cohorts were identified on the Coordinating Board's database as first-time doctoral students at Texas public universities and health-related institutions.

These cohorts were developed by: 1) reviewing data from ten years prior to each start year, and 2) removing from each cohort students who had enrolled at the doctoral level before the start year (fall 1990, fall 1991, and fall 1992). Only institutions with students in each of the three cohorts were used in the analysis. Each cohort was tracked for ten years (i.e., FY1991 to FY2000, FY1992 to FY2001, FY1993 to FY2002) to determine those students who received a doctoral degree, those who only received a master's degree, and those who received no degree.

For each student who received a doctoral degree, two computations were made to determine: 1) a registered time to degree (only adding the number of semesters in which the student was registered), and 2) a total time to degree (the elapsed time in semesters from the fall of in the cohort start year until the year the doctoral degree was received). It is acknowledged that although ten years was used to make the cohort time spans comparable, some students will obtain doctoral degrees beyond that time span.

Weighted averages were computed based upon the size of the cohort (by institution and by discipline area – two-digit CIP Code) to provide results that were more stable. Obviously, the larger the number of cohorts, the more reliable the averages become.

## Appendix G - Completion Rates\* of Doctoral Degrees in Education\*\* by Texas University (Fall 1990, Fall 1991, and Fall 1992 Student Cohorts)



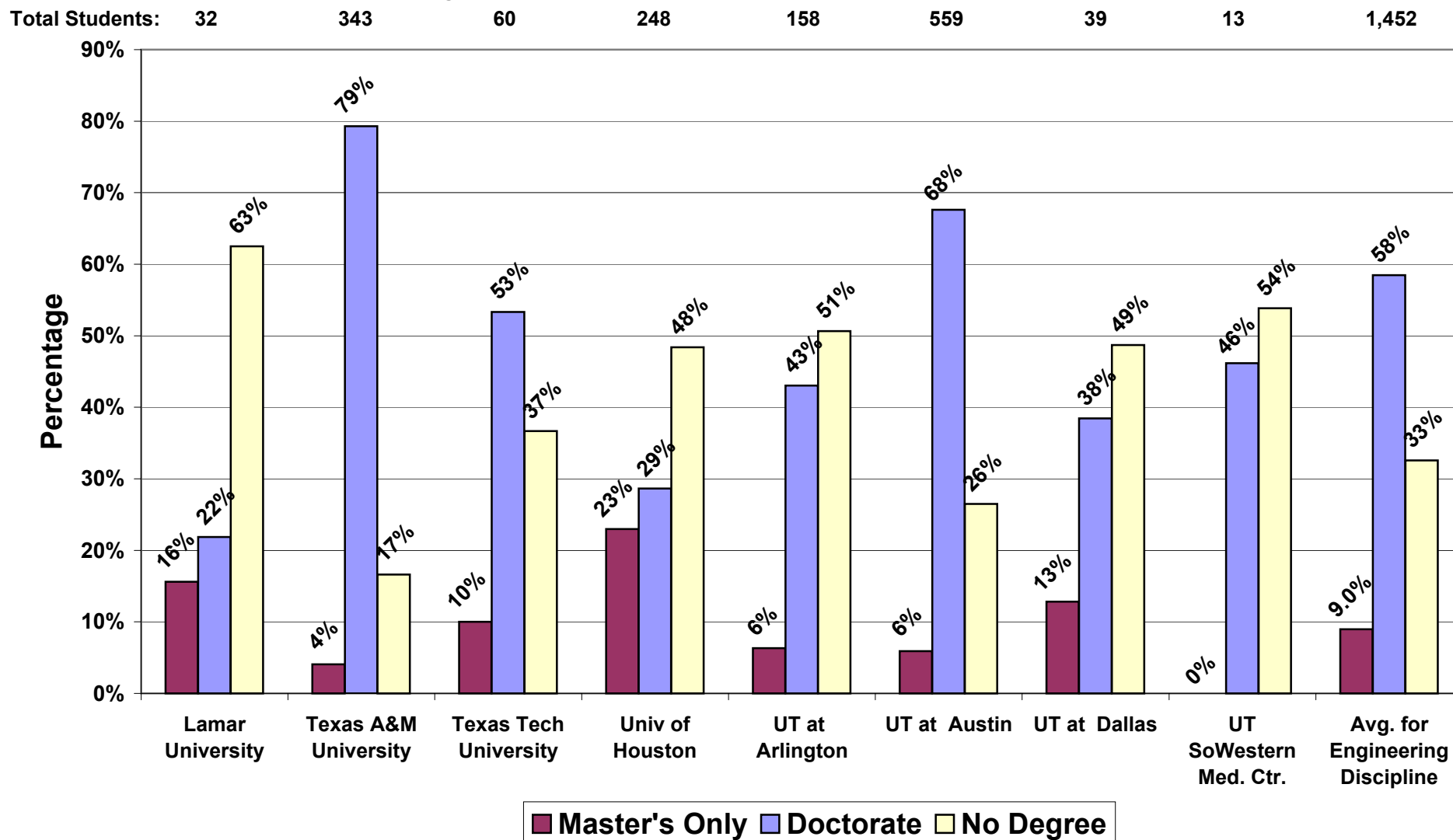
\* Each cohort tracked for ten years. \*\* "Education" includes CIP Code 13.

Note: Sam Houston State University is not included because the student cohorts equal fewer than five students.

Sources: Texas Higher Education Coordinating Board; institutions' CBM 001 and CBM 009 Reports.

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## Appendix H - Completion Rates\* of Doctoral Degrees in Engineering\*\* by Texas University (Fall 1990, Fall 1991, and Fall 1992 Student Cohorts)



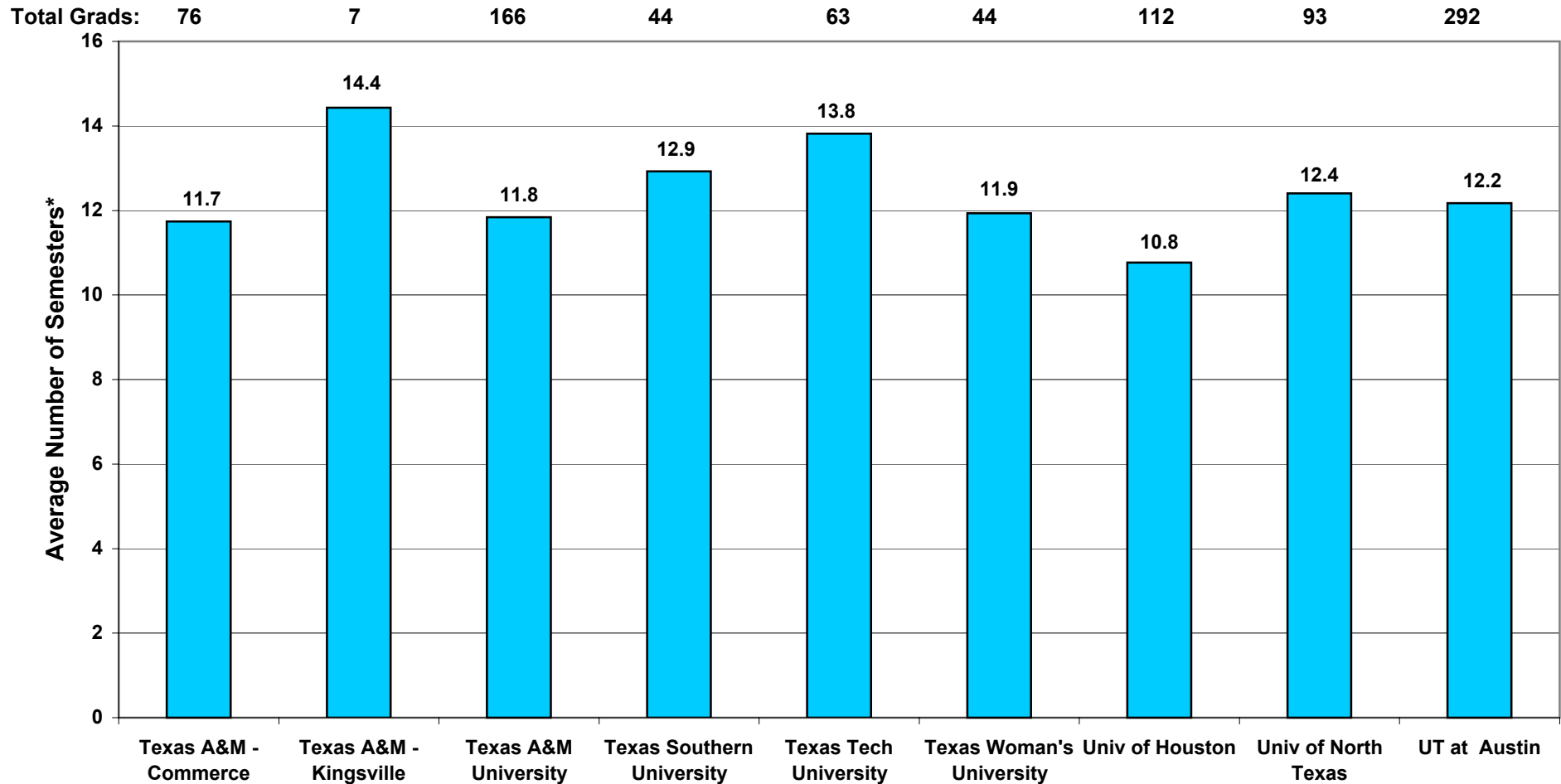
\* Each cohort tracked for ten years. \*\* "Engineering" includes CIP Codes 14 and 41.

Note: Baylor College of Medicine is not included because the student cohorts equal fewer than five students.

Sources: Texas Higher Education Coordinating Board; institutions' CBM 001 and CBM 009 Reports.

THECB 10/2004

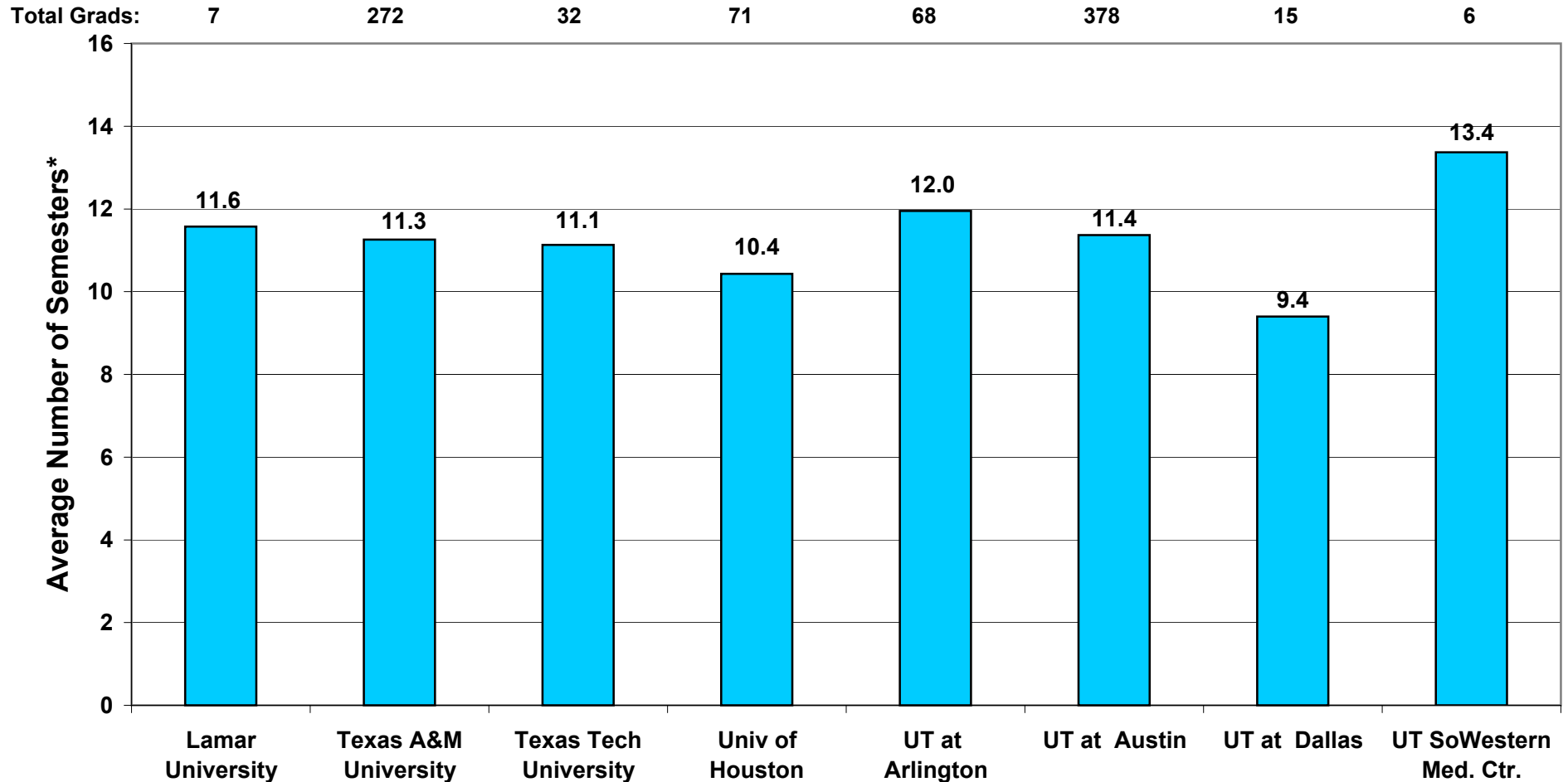
## Appendix I - Semesters of Doctoral Enrollment for Recipients of Doctoral Degrees in Education by Texas University (Fall 1990, Fall 1991, and Fall 1992 Student Cohorts)



\* Average number of semesters are weighted averages, based on doctoral graduates who began in fall 1990, fall 1991, or fall 1992.

Note: Sam Houston State University is not included because the student cohorts equal fewer than five students.

## Appendix J - Semesters of Doctoral Enrollment for Recipients of Doctoral Degrees in Engineering by Texas University (Fall 1990, Fall 1991, and Fall 1992 Student Cohorts)



\* Average number of semesters are weighted averages, based on doctoral graduates who began in fall 1990, fall 1991, or fall 1992.

Note: Baylor College of Medicine and The University of Texas at El Paso are not included because fewer than five students graduated from these cohorts.

Sources: Texas Higher Education Coordinating Board; institutions' CBM 001 and CBM 009 Reports.

THECB 10/2004



## Appendix K

### **Efforts to Increase Doctoral Student Persistence at the University of California at Berkeley: Best Practices Implemented as a Result of California's 1991 Study of Doctoral Education**

*Note: The following summary combines information from two academic articles by Maresi Nerad and Debra Sands Miller (1996, 1997) regarding the University of California at Berkeley's efforts to increase doctoral student graduation rates and decrease their time-to-degree.*

#### **Background**

In 1990, concern about the high attrition rates of doctoral students resulted in California State Senate Concurrent Resolution 103, which mandated a study of doctoral completion rates. In 1990, the Office of the President of the University of California (UC) commissioned a study of time-to-degree and factors affecting completion. This study examined time-to-degree on all nine UC campuses using data on earned doctorates for three cohorts of UC doctoral recipients over a ten-year period. The study found that the median elapsed time-to-degree had increased by 1.3 years from 1968 to 1988. An analysis of the data by major fields of study demonstrated that the length was greatest in the arts and humanities and the social sciences.

This study also analyzed doctoral completion rates. In 1991 only the UC Berkeley campus had collected data that allowed for such analysis, so this portion of the study included only UC Berkeley students. The Berkeley database identified completion rates by each entering cohort from 1975 through 1983. Entering cohorts were tracked over a twelve-year period to ensure that the vast majority of students had time to complete the degree. Three annual cohorts were grouped together to provide a larger number of cases for analysis (i.e., entering cohorts 1975-1977, N = 3,852 students; entering cohorts 1978-1980, N = 3,748 students; and entering cohorts 1991-1993, N = 3,553 students). Findings revealed that completion rates varied widely across major fields of study. Students in the humanities and social sciences had the lowest completion rates; biological and physical science doctoral students had the highest. Findings also revealed that a low completion rate correlated with long time-to-degree.

Further investigations of these data showed that the majority of students left during their first three years of graduate study (31 percent), generally before they advanced to doctoral candidacy, and a smaller number (11 percent) left after advancement to candidacy, between the fourth and twelfth years. However, when attrition rates were compared between humanities and social science doctoral students and biological and physical sciences doctoral students, the attrition rates were found to be higher for humanities and social science students after they had advanced to candidacy.

Analysis of financial support patterns revealed that support patterns in the humanities and social science disciplines were among the reasons that students in these disciplines took longer to complete their degrees and had higher attrition rates. While students in the sciences primarily supported themselves with research assistantships, students in the humanities and social sciences depended on teaching assistantships and their own earnings for support. Prior research had shown that students whose major financial support came from their own or a spouse's earnings took the longest average time to complete their degrees (11.0 years), and those supported by research assistantships completed their degrees in the shortest average time (7.0 years).

Qualitative research, which consisted primarily of semi-structured, in-depth individual interviews, collaborated quantitative findings. Focus group interviews conducted with humanities and social science students revealed particular field-specific obstacles that delayed or prevented doctoral degree completion. In addition to financial factors, these interviews revealed that writing dissertations posed more challenges for students in the humanities and social sciences, due to the following reasons. Specifically, students in the humanities and social sciences:

- Usually face a solitary research and writing experience and have less frequent interaction with their advisor and peers than do students working in biological and physical sciences laboratories;
- Tend to encounter greater difficulties than their counterparts in the hard sciences when they cease to be engaged in reading and become responsible for producing original research material based on research findings;
- Often encounter a lack of consensus about what constitutes an appropriate doctoral research project; and
- Are reliant upon the advising relationship for the dissertation process and doctoral completion, because the decision about the dissertation's scope and character rests particularly with the main dissertation advisor.

### **Support Structures and Programs Developed for Doctoral Students at UC Berkeley**

In response to research findings and to address students' concerns, the Graduate Division at UC Berkeley adopted a three-pronged approach to improving doctoral student retention and reducing time-to-degree:

#### **1. Institutional Policies and Strategies**

- **Monitoring of Progress.** The Graduate Division systematically monitors completion rates and the progress of graduate students throughout their graduate careers and regularly reports its findings to departments. When necessary, the Graduate Dean conducts a half-day visit to the department.
- **First-Year Evaluations.** Departments conduct a first-year evaluation, during which a team of faculty meets separately with each student.
- **Annual Reports on Progress in Candidacy.** Departments conduct and report to the Graduate Division an annual review of doctoral candidates for purposes of faculty advising and mentoring.
- **Financial Support Structures.** Departments are encouraged not to allocate all their funds for fellowships to attract new students, but to reserve a portion for students at later stages of the degree program.

*Note: Financial support package recommended for departments in the humanities and social science disciplines includes the following: fellowships for the first year, teaching assistantships for years two and three, fellowships at the conceptualizing stage of the dissertation, and, if available, research assistantships for one year and dissertation-writing fellowships for the final year.*

## 2. Work with Departments

- **Distinction between Advising and Mentoring.** Advisors are responsible for assisting students in selecting programs of study and for ensuring that students make adequate progress toward requirements. Mentors are responsible for helping the protégé set goals and standards and develop skills, protecting the protégé from others, and facilitating a successful entrance into academic and professional schools. Mentoring is the acknowledged responsibility of the entire department.
- **Graduate Assistant Advisory Group.** This 15-member group acts as a liaison between the Graduate Division and graduate assistants for sharing information and voicing concerns.
- **Guide for Graduate Students.** The guide *Easing the Way for Graduate Students* provides positive examples of successful departmental activities.

## 3. Work with Students

- **Orientation Programs.** These first-semester graduate student orientations are organized by the Graduate Division and provide information on the stages of the doctoral program.
- **Grant Proposal Writing Workshops.** These workshops and individualized consultations are offered to graduate students throughout the academic year to assist students in locating and applying for funding.
- **Dissertation Writing Workshops.**
  - Three-Day Topical Interdisciplinary Dissertation Workshops. These off-campus workshops bring together three to four faculty and twelve students writing dissertations on closely related subjects but in different disciplines.  
*Note: Because of the small fraction of graduate students that can be served by the formal workshop, faculty members have begun organizing dissertation workshops in their own departments or areas of interest.*
  - Day-long Dissertation Writing Workshops. These workshops focus on the practical aspects of dissertation writing and strategies for working effectively with the dissertation advisor.
- **Dissertations-in-Progress Abstract Database.** This database of abstracts of UC Berkeley dissertations in progress is accessible from a university library Web page, and searchable by students. The abstracts include information on how to contact the author. A set of seminar rooms have been designated in the library for group meetings of doctoral students.
- **Academic Publishing Workshop.** This two-hour workshop provides students with information about publishing dissertations as journal articles or books through an academic press.

- **Academic Publishing Guide.** This guide provides students with written information about publishing dissertations as journal articles or books through an academic press.
- **Newsletter for Graduate Students.**
- **Academic Job Search Assistance.**

### **Outcomes**

A comparison of the cohorts that entered between 1975 and 1977 with the cohorts that entered between 1981 and 1983 revealed that, overall, the doctoral completion rate increased by 11 percent. In languages and literatures, doctoral completion rates increased from 27 percent to 43 percent. In the social sciences, the rate went from 43 percent to 52 percent. While it is not possible to establish a direct causal link between the programs developed for doctoral students and improved doctoral completion rates, the institution believes that, to some degree, improved completion rates are the result of the Graduate Division's three-pronged approach, and particularly the Division's efforts to assist students during the dissertation-writing phase of the doctoral dissertation.

### **Staff Comment**

Given that the support structures and programs developed at UC Berkeley are related to improved doctoral completion rates at arguably one of the best higher education institutions in the nation (and which benefits from attracting some of the best students in the U.S.), staff believes that such efforts also are likely to contribute to improved doctoral completion rates at institutions in Texas.